

Sea Level Rise in Long Beach: What Home Owners Can Do to Prepare

14 January 2019

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Aquarium of the Pacific

High Level Messages

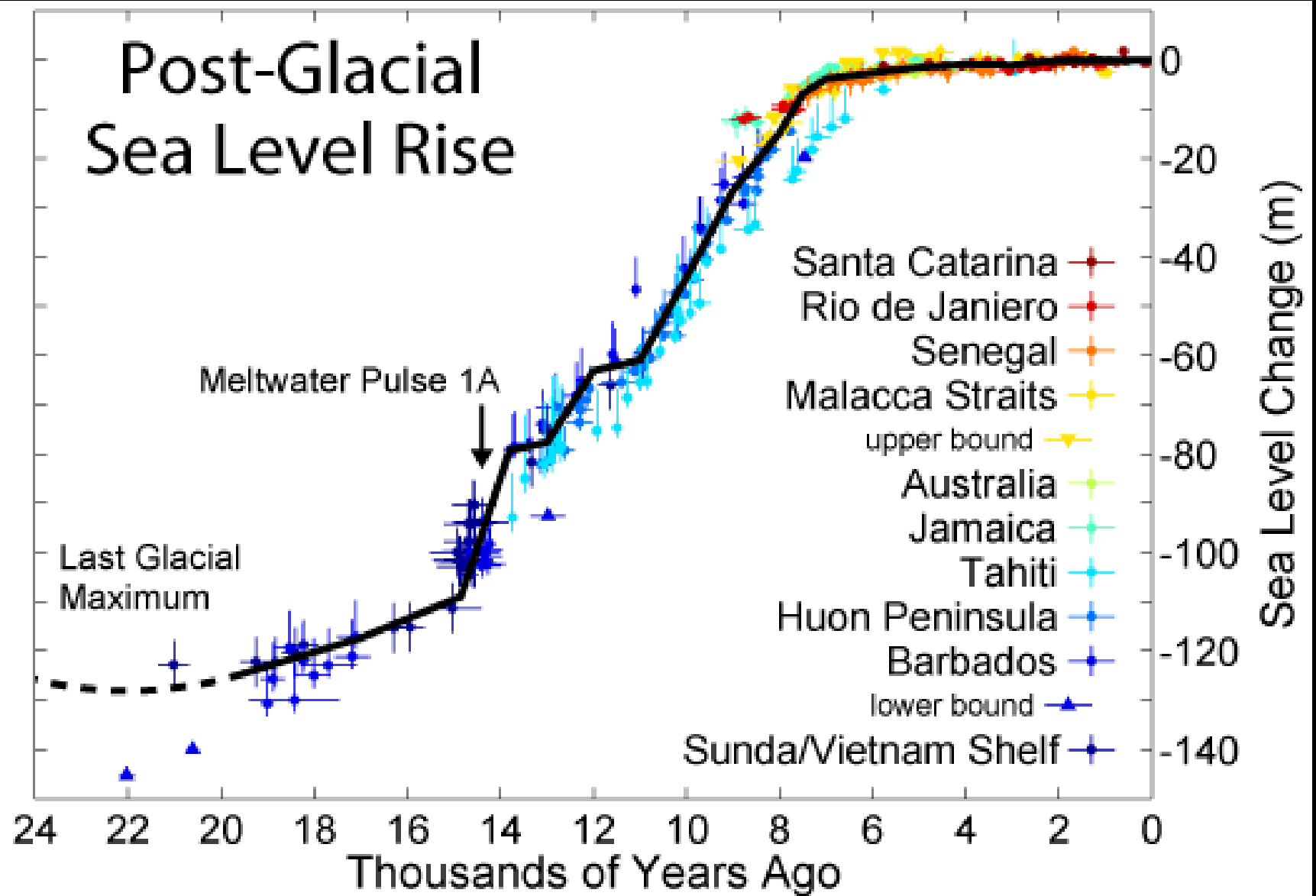
- SLR is a global problem, mediated by tides, storm waves, El Niños and PDOs
- Flooding vs. Inundation
- SLR is accelerating and will continue to...
- We are committed to a higher sea level...
- The amount of SLR = f (how much and how rapidly we reduce GHG emissions)
- Sunny Day flooding will increase
- In LB we have a few decades, not more

"Always predict the worst and you will be hailed as a profit."

Tom Lehrer



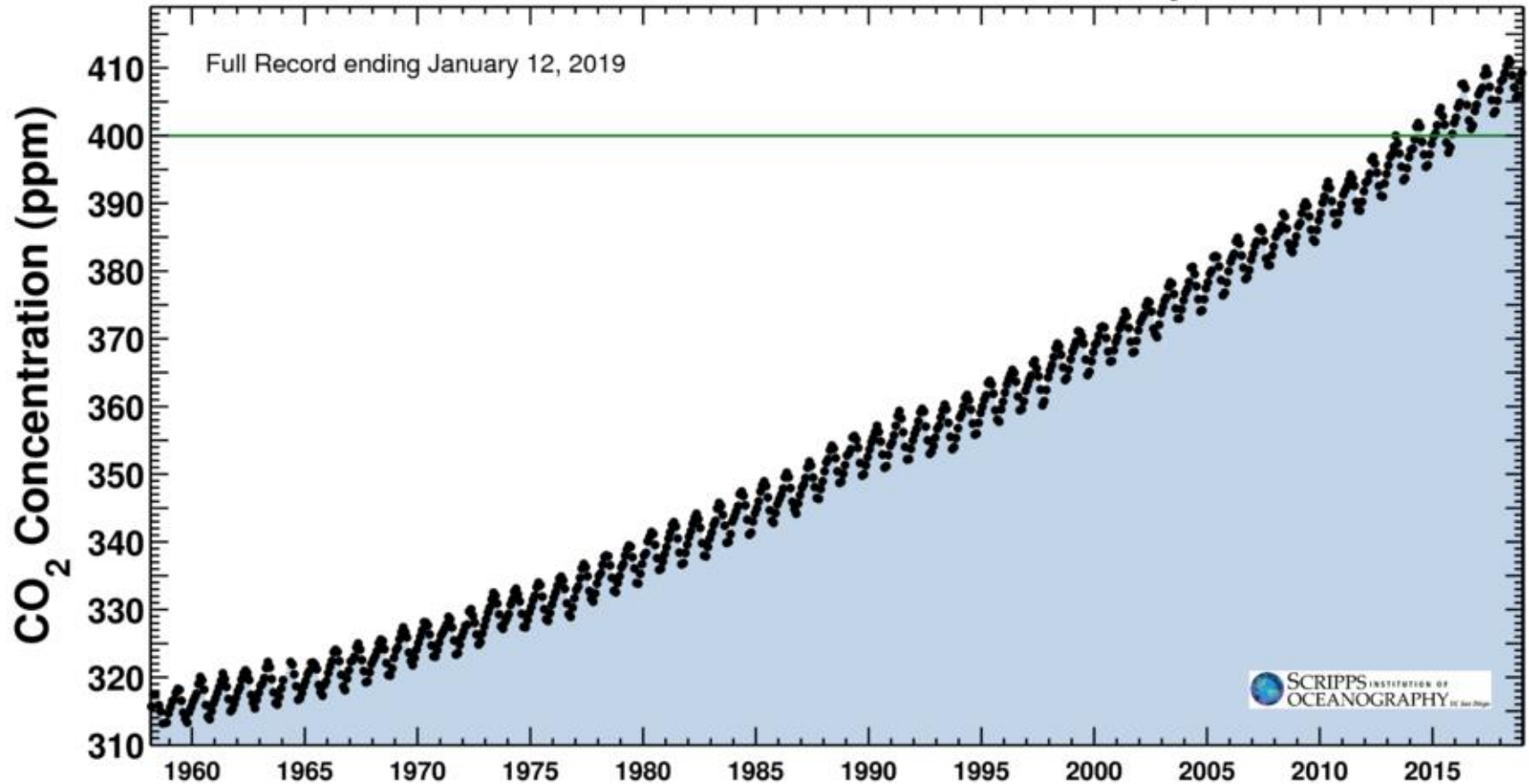
Post-Glacial Sea Level Rise



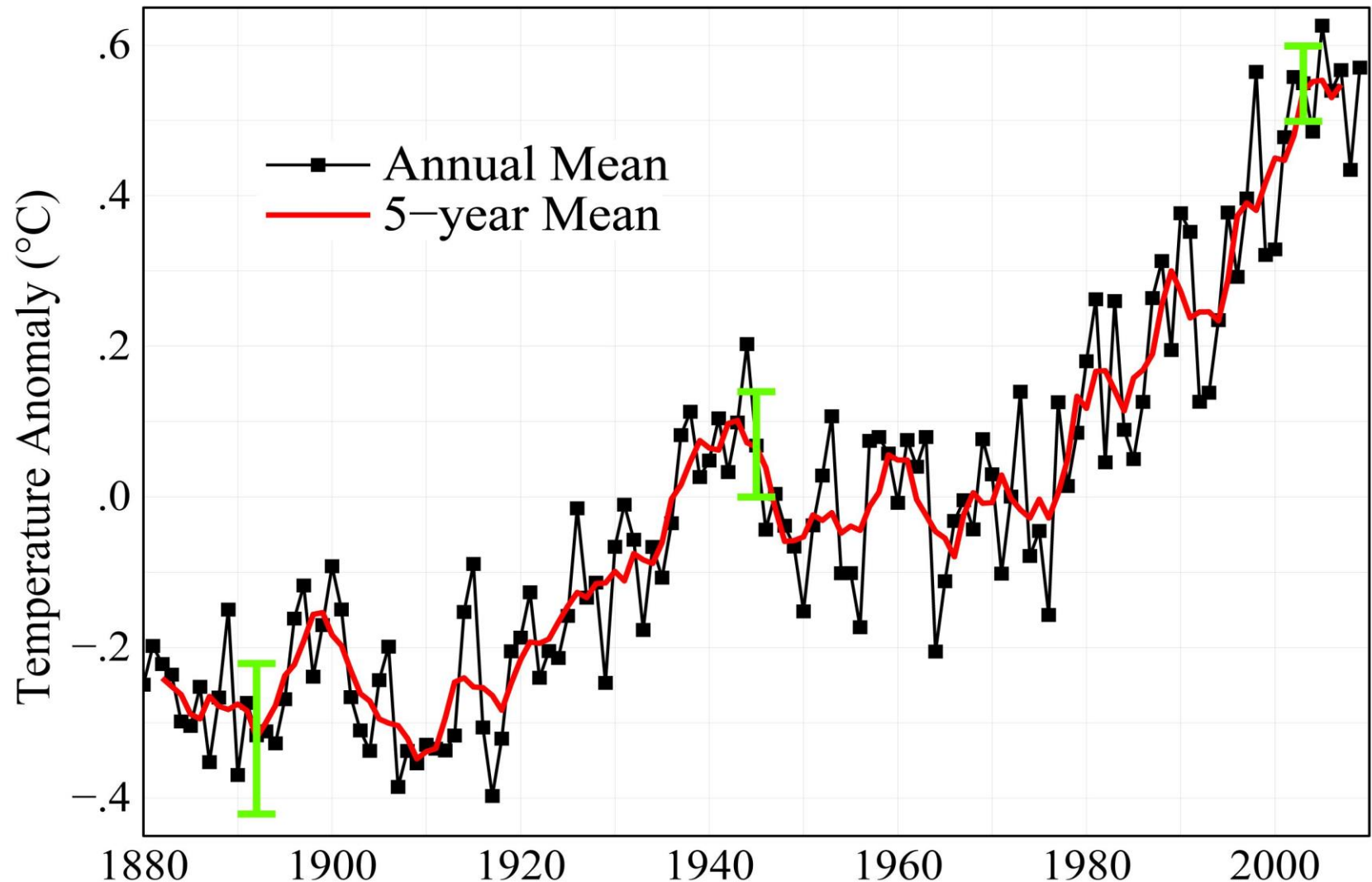
Latest CO₂ reading
January 11, 2019

409.44 ppm

Carbon dioxide concentration at Mauna Loa Observatory



Global Land–Ocean Temperature Index



According to NASA, Earth's Average Temperature Has Increased by 0.8°C (1.4°F) Since 1880



Greenland

If All of the Greenland Ice Sheet were to melt, sea level would Rise by about 20Ft.

If All of Antarctic Ice Sheet were to melt, sea level would rise by about 200 ft.



Once in the Atmosphere CO₂ stays...

- 50% for decades
- 30% for centuries
- 20% for millennia

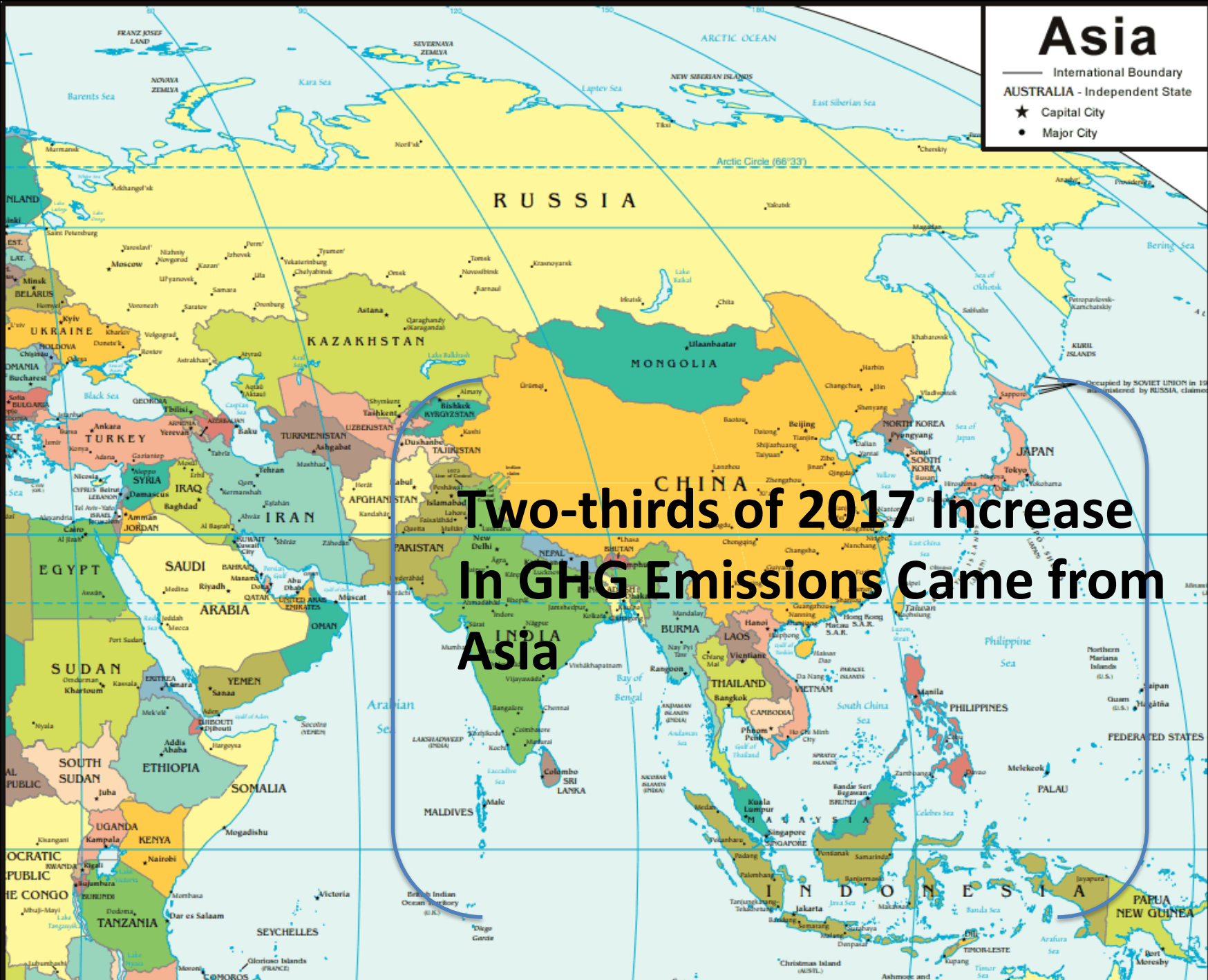
Asia

— International Boundary
AUSTRALIA - Independent State

★ Capital City

● Major City

Two-thirds of 2017 Increase
In GHG Emissions Came from
Asia



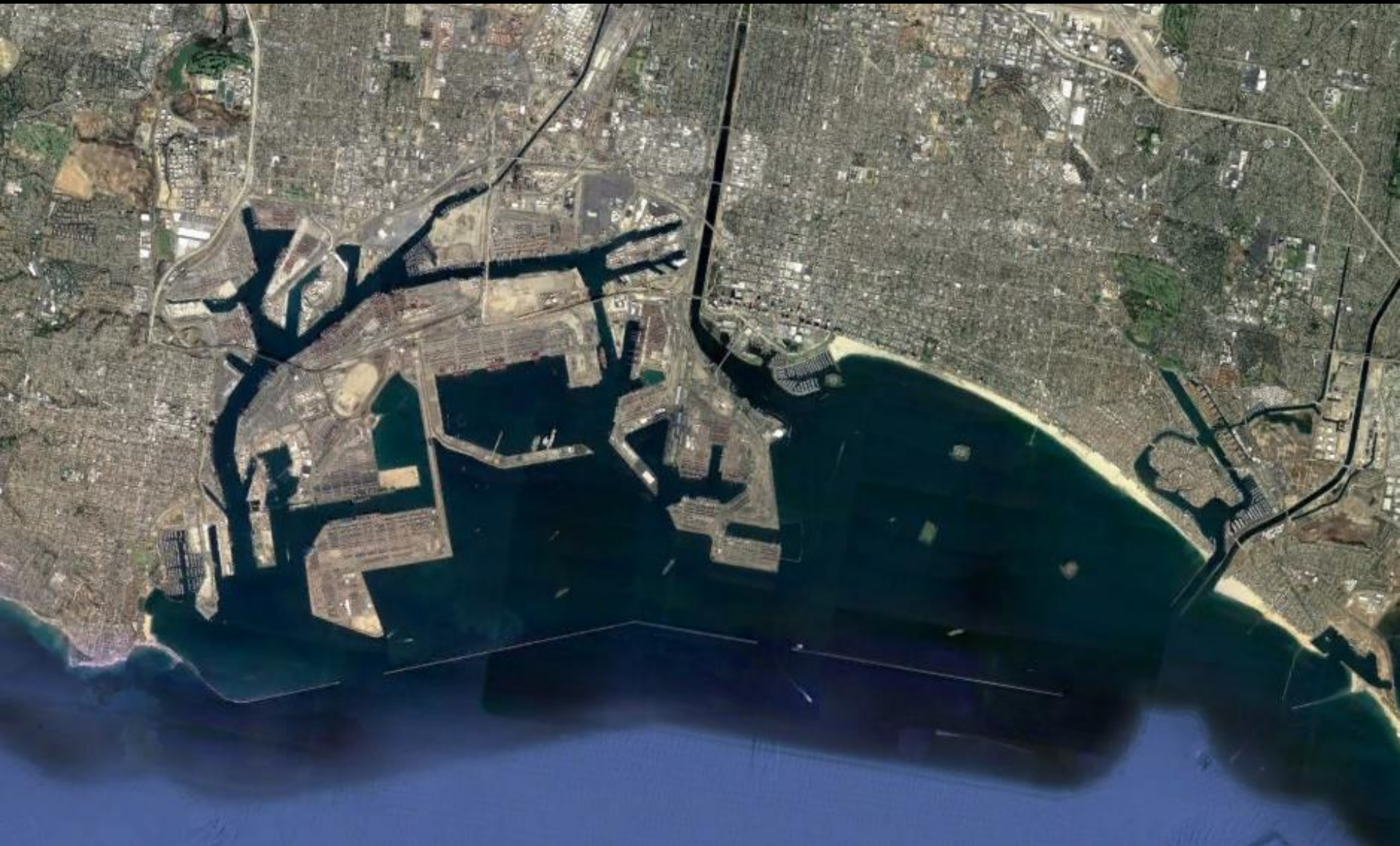




At Some Point...

- We will need to reset the atmosphere to an earlier period...
- Remove CO₂ from the Atmosphere and lock it away...
- Geo-Engineering
 - The Soft Approach...
 - The “Hard Approach”

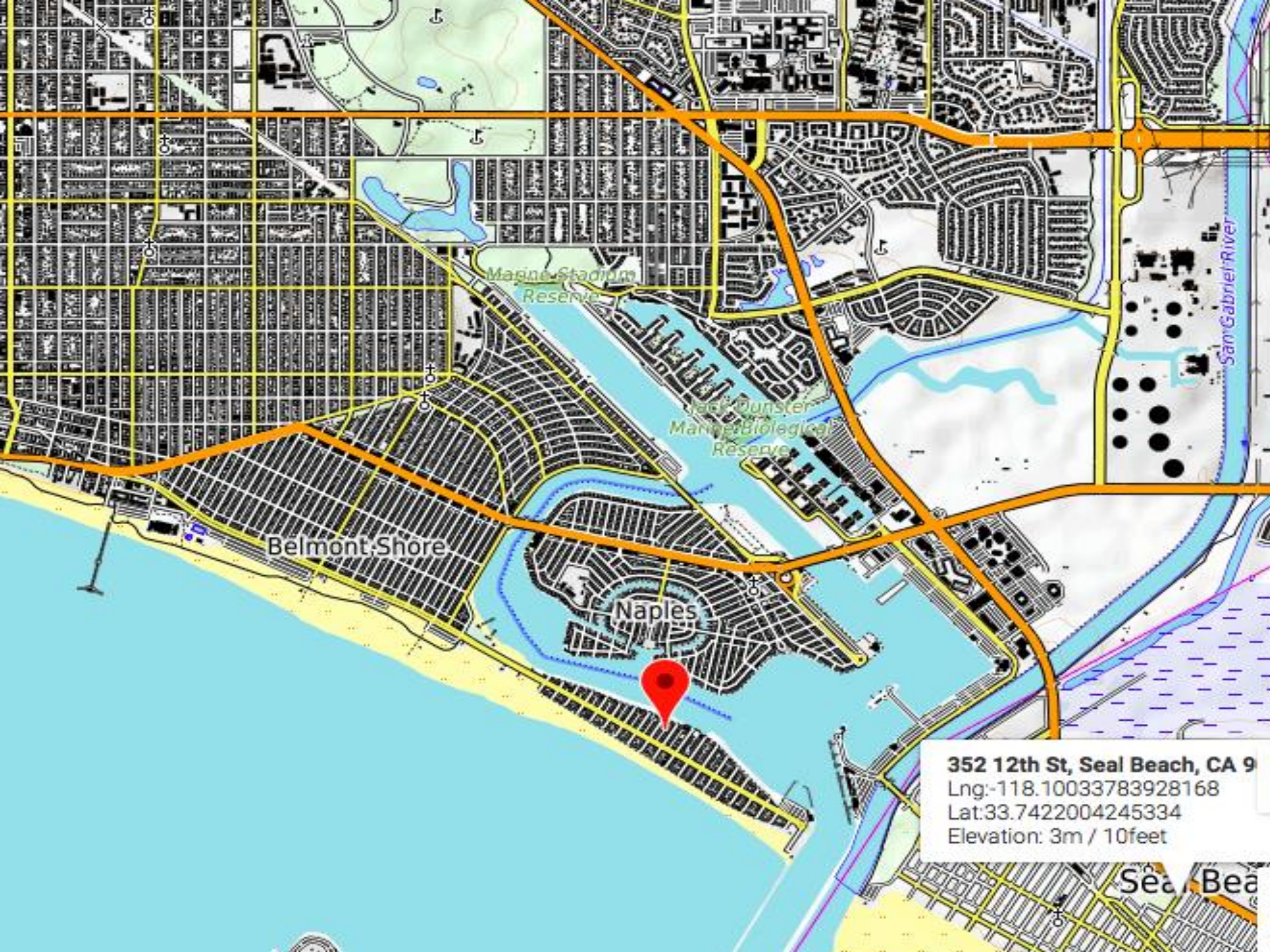
Los Angeles and Long Beach Harbors





How long will
this work?





Belmont Shore

Naples

Marine Stadium Reserve

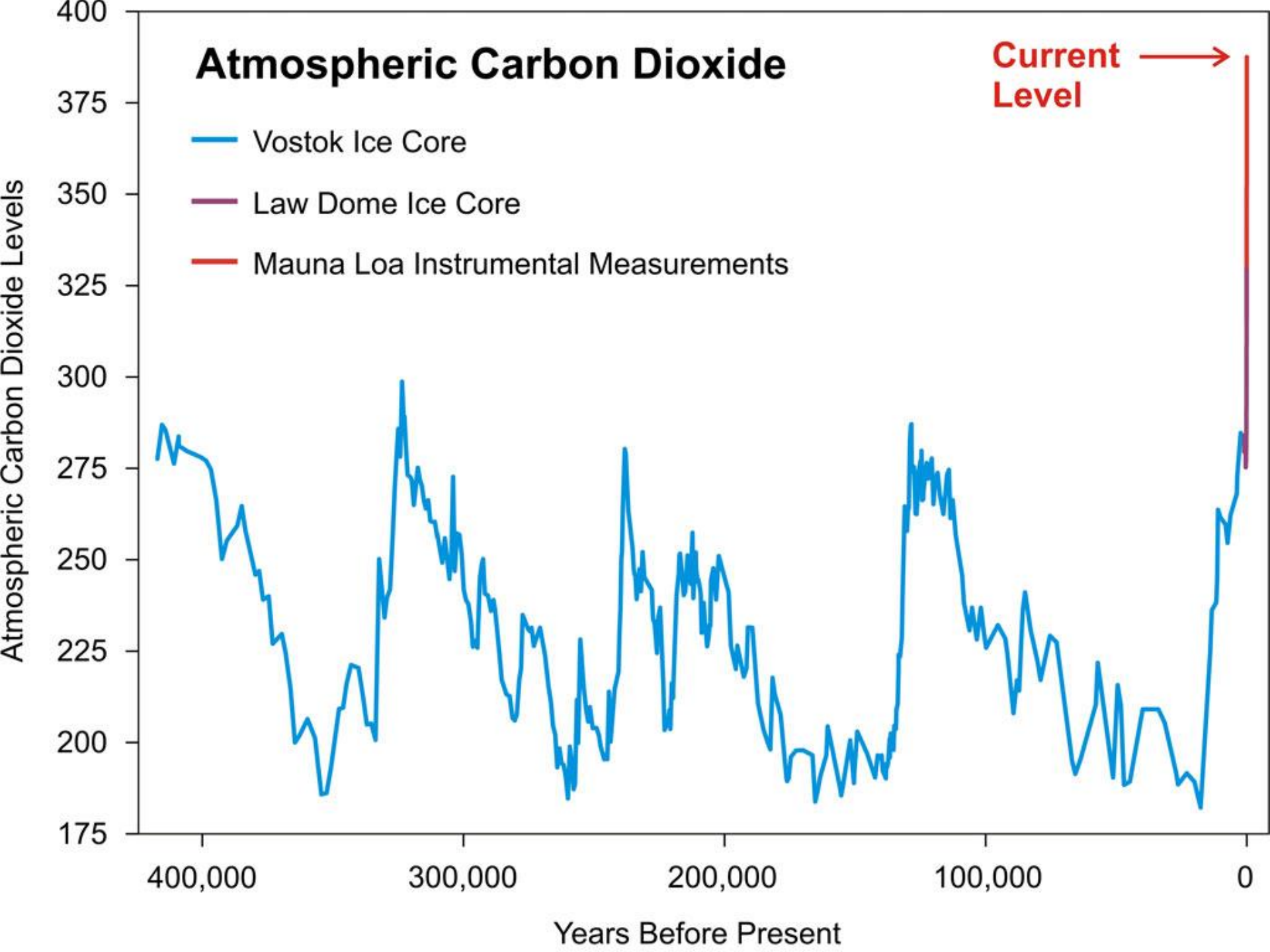
Jack Dunster Marine Biological Reserve

San Gabriel River

352 12th St, Seal Beach, CA 9
Lng:-118.10033783928168
Lat:33.7422004245334
Elevation: 3m / 10feet

Seal Beach





Last Time CO₂ levels were as High as Today was in the Pliocene, 3-5 my ago



- Sea Level was up to 130 ft higher than today
- Earth's Average Temperature was 7°F warmer
- Mega-toothed sharks prowled the ocean

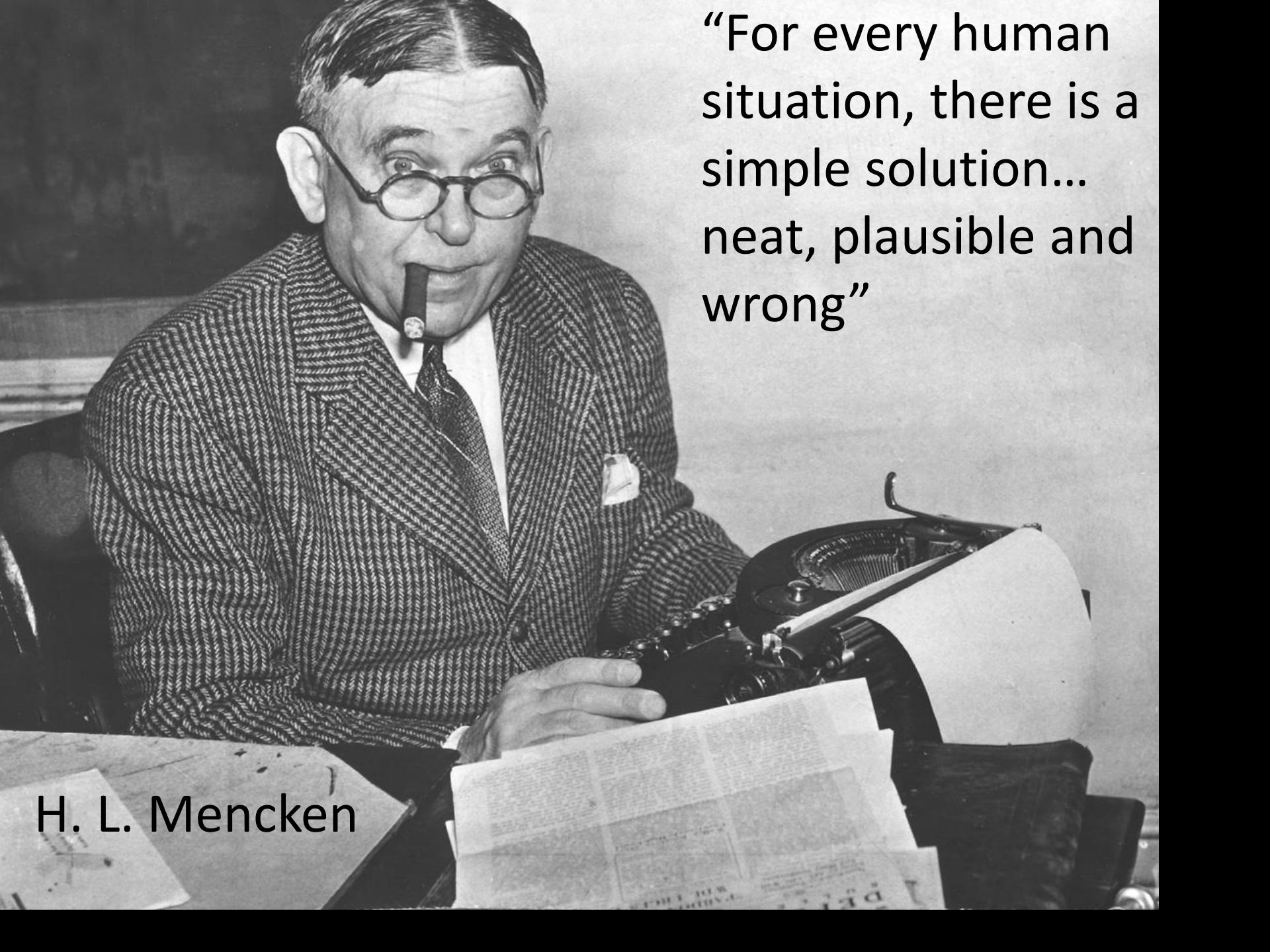
Global Warming Will Happen Faster Than We Think: 3 Reasons

- GHG emissions are still rising
 - Air Quality is improving
 - Entering a warm period, PDO
-
- Nature, 5 Dec. 2018



How Can Home Owners Prepare?

- It's a global problem...ADAPT
- Keep an open mind; be open to ALL options...including a combination of hard and soft solutions
- Make a plan for an orderly exit from coast within a few decades...elevating your home may buy you a little time, but not much. You still need access and services.

A black and white photograph of H. L. Mencken. He is seated at a desk, looking directly at the camera with a slight, knowing expression. He wears round-rimmed glasses and a dark, herringbone-patterned suit jacket over a white shirt and a dark tie. A cigar is held in his mouth. His hands are resting on a large, open newspaper or document spread across the desk. To his right, a vintage typewriter is visible, with a sheet of paper emerging from it. The background is a plain, light-colored wall.

“For every human situation, there is a simple solution... neat, plausible and wrong”

H. L. Mencken

Thank you

You can lead a
human to
knowledge but
you can't make
him think.





“I don’t believe it...people like myself with very high levels of intelligence don’t accept the scientific consensus that human activity is responsible for climate change.”



U.S. Global Change
Research Program

Fourth National Climate Assessment



Volume II

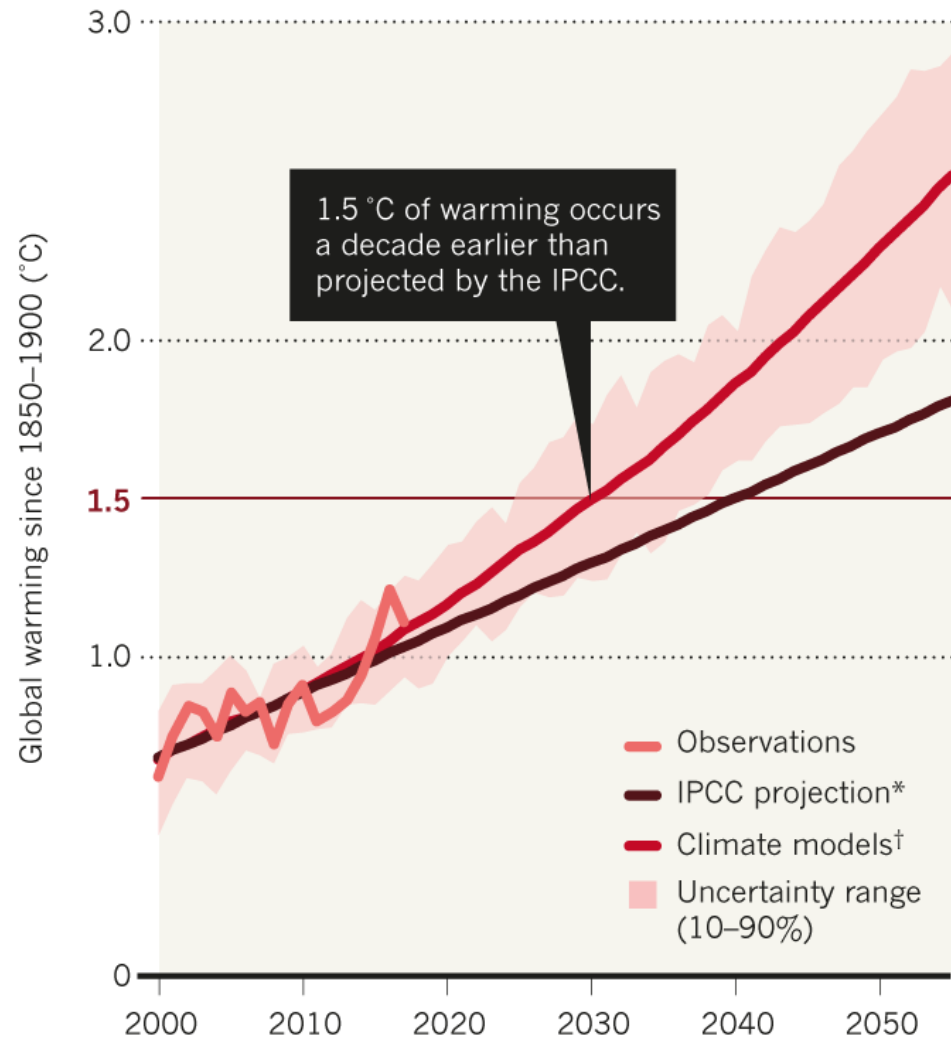
Impacts, Risks, and Adaptation in the United States

Overview

Thank you

ACCELERATED WARMING

Climate simulations predict that global warming will rise exponentially if emissions go unchecked.



*Trend for 2001-15 extended with a constant rate of 0.2 °C per decade, as per IPCC special report. †Ten-year average, 37 climate models for the RCP8.5 scenario (IPCC Fifth Assessment, 2014).

